

Amendments to the Claims

The following listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1-4364. (cancelled)

4365. (previously presented): A mixture produced from a coal formation, comprising:

a non-condensable component comprising hydrocarbons having carbon numbers of less than about 5, wherein a weight ratio of the hydrocarbons having carbon numbers from 2 through 4 to methane in the mixture is greater than approximately 1;

wherein the non-condensable component comprises H_2 , wherein greater than about 15 % by weight of the non-condensable component comprises H_2 ; and

condensable hydrocarbons, comprising:

oxygenated hydrocarbons, wherein greater than about 1.5 % by weight of the condensable hydrocarbons comprises oxygenated hydrocarbons;

olefins, wherein less than about 10 % by weight of the condensable hydrocarbons comprises olefins; and

aromatic compounds, wherein greater than about 20 % by weight of the condensable hydrocarbons comprises aromatic compounds.

4366. (previously presented): The mixture of claim 4365, wherein the non-condensable component comprises ethene and ethane, and wherein a molar ratio of ethene to ethane in the non-condensable component ranges from about 0.001 to about 0.15.

4367. (previously presented): The mixture of claim 4365, wherein less than about 1 % by weight, when calculated on an atomic basis, of the condensable hydrocarbons is oxygen.

4368. (previously presented): The mixture of claim 4365, wherein less than about 1 % by weight, when calculated on an atomic basis, of the condensable hydrocarbons is sulfur.

4369. (previously presented): The mixture of claim 4365, wherein less than about 1 % by weight, when calculated on an atomic basis, of the condensable hydrocarbons is sulfur.

4370. (previously presented): The mixture of claim 4365, wherein the oxygenated hydrocarbons comprise phenols.

4371. (original): The mixture of claim 4365, wherein the condensable hydrocarbons comprise multi-ring aromatics, and wherein less than about 5 % by weight of the condensable hydrocarbons comprises multi-ring aromatics with more than two rings.

4372. (original): The mixture of claim 4365, wherein the condensable hydrocarbons comprise asphaltenes, and wherein less than about 0.3 % by weight of the condensable hydrocarbons are asphaltenes.

4373. (original): The mixture of claim 4365, wherein the condensable hydrocarbons comprise cycloalkanes, and wherein about 5 % by weight to about 30 % by weight of the condensable hydrocarbons are cycloalkanes.

4374. (previously presented): The mixture of claim 4365, wherein greater than about 10 % by volume and less than about 80% by volume at 25 °C and one atmosphere absolute pressure of the non-condensable component comprises H₂.

4375. (original): The mixture of claim 4365, further comprising ammonia, and wherein greater than about 0.05 % by weight of the produced mixture is ammonia.

4376. (currently amended): The mixture of claim 4365, further comprising ammonia, and wherein at least a portion of the ammonia is used to produce fertilizer.

4377. (previously presented): The mixture of claim 4365, wherein the condensable hydrocarbons comprise hydrocarbons having a carbon number of greater than approximately 25, wherein less than about 15 % by weight of the hydrocarbons have a carbon number greater than approximately 25.

4378. (previously presented): The mixture of claim 4365, wherein about 0.1 % to about 5 % by weight of the condensable hydrocarbons comprise olefins.

4379. (previously presented): The mixture of claim 4365, wherein about 0.1 % to about 2 % by weight of the condensable hydrocarbons comprise olefins.

4380. (previously presented): The mixture of claim 4365, wherein greater than about 5 % by weight of the condensable hydrocarbons comprise oxygenated hydrocarbons.

4381. (original): The mixture of claim 4365, wherein the mixture comprises hydrocarbons having greater than about 2 carbon atoms, and wherein the weight ratio of hydrocarbons having greater than about 2 carbon atoms to methane is greater than about 0.3.

4382. (previously presented): A mixture produced from a coal formation, comprising:
condensable hydrocarbons, wherein less than about 5 % by weight of the condensable hydrocarbons comprise hydrocarbons having a carbon number greater than about 25;
wherein the condensable hydrocarbons comprise:
oxygenated hydrocarbons, wherein greater than about 5 % by weight of the condensable hydrocarbons comprises oxygenated hydrocarbons;
olefins, wherein less than about 10 % by weight of the condensable hydrocarbons comprises olefins; and

aromatic compounds, wherein greater than about 30 % by weight of the condensable hydrocarbons comprises aromatic compounds; and

a non-condensable component comprising H₂, wherein greater than about 15 % by weight of the non-condensable component comprises H₂.

4383. (previously presented): The mixture of claim 4382, wherein the non-condensable component comprises hydrocarbons having carbon numbers of less than 5, and wherein a weight ratio of hydrocarbons having carbon numbers from 2 through 4 to methane is greater than approximately 1.

4384. (previously presented): The mixture of claim 4382, wherein the non-condensable component comprises ethene and ethane, and wherein a molar ratio of ethene to ethane in the non-condensable component ranges from about 0.001 to about 0.15.

4385. (previously presented): The mixture of claim 4382, wherein the condensable hydrocarbons comprise nitrogen containing compounds, and wherein less than about 1 % by weight, when calculated on an atomic basis, of the condensable hydrocarbons is nitrogen.

4386. (previously presented): The mixture of claim 4382, wherein less than about 1 % by weight, when calculated on an atomic basis, of the condensable hydrocarbons is oxygen.

4387. (previously presented): The mixture of claim 4382, wherein less than about 1 % by weight, when calculated on an atomic basis, of the condensable hydrocarbons is sulfur.

4388. (previously presented): The mixture of claim 4382, wherein the oxygenated hydrocarbons comprise phenols.

4389. (previously presented): The mixture of claim 4382, wherein less than about 5 % by weight of the condensable hydrocarbons comprise multi-ring aromatics with more than two rings.

4390. (previously presented): The mixture of claim 4382, wherein less than about 0.3 % by weight of the condensable hydrocarbons comprise asphaltenes.

4391. (previously presented): The mixture of claim 4382, wherein about 5 % by weight to about 30 % by weight of the condensable hydrocarbons comprise cycloalkanes.

4392. (previously presented): The mixture of claim 4382, wherein greater than about 10 % by volume and less than about 80 % by volume at 25 °C and one atmosphere absolute pressure of the non-condensable component is H₂.

4393. (original): The mixture of claim 4382, further comprising ammonia, and wherein greater than about 0.05 % by weight of the produced mixture is ammonia.

4394. (currently amended): The mixture of claim 4382, further comprising ammonia, and wherein at least a portion of the ammonia is used to produce fertilizer.

4395. (previously presented): The mixture of claim 4382, wherein about 0.1 % to about 5 % by weight of the condensable hydrocarbons comprise olefins.

4396. (previously presented): The mixture of claim 4382, wherein about 0.1 % to about 2 % by weight of the condensable hydrocarbons comprise olefins.

4397. (previously presented): The mixture of claim 4382, wherein greater than about 15 % by weight of the condensable hydrocarbons comprises oxygenated hydrocarbons.

4398. (original): The mixture of claim 4382, wherein the mixture comprises hydrocarbons having greater than about 2 carbon atoms, and wherein the weight ratio of hydrocarbons having greater than about 2 carbon atoms to methane is greater than about 0.3.

4399. (previously presented): A condensable mixture produced from a coal formation, comprising:

olefins, wherein about 0.1 % by weight to about 15 % by weight of the condensable mixture comprises olefins;

oxygenated hydrocarbons, wherein less than about 15 % by weight of the condensable mixture comprises oxygenated hydrocarbons; and

asphaltenes, wherein less than about 0.1 % by weight of the condensable mixture comprises asphaltenes.

4400. (previously presented): The mixture of claim 4399, wherein less than about 15 weight % of the hydrocarbons in the mixture have a carbon number greater than approximately 25.

4401. (original): The mixture of claim 4399, wherein about 0.1 % by weight to about 5 % by weight of the condensable mixture comprises olefins.

4402. (original): The mixture of claim 4399, wherein the condensable mixture further comprises non-condensable hydrocarbons, wherein the non-condensable hydrocarbons comprise ethene and ethane, and wherein a molar ratio of ethene to ethane in the non-condensable hydrocarbons ranges from about 0.001 to about 0.15.

4403. (previously presented): The mixture of claim 4399, wherein less than about 1 % by weight, when calculated on an atomic basis, of the condensable mixture is nitrogen.

4404. (previously presented): The mixture of claim 4399, wherein less than about 1 % by weight, when calculated on an atomic basis, of the condensable mixture is oxygen.

4405. (previously presented): The mixture of claim 4399, wherein less than about 1 % by weight, when calculated on an atomic basis, of the condensable mixture is sulfur.

4406. (previously presented): The mixture of claim 4399, wherein the oxygenated hydrocarbons comprise phenols.

4407. (previously presented): The mixture of claim 4399, wherein greater than about 20 % by weight of the condensable mixture comprise aromatic compounds.

4408. (previously presented): The mixture of claim 4399, wherein less than about 5 % by weight of the condensable hydrocarbons comprises multi-ring aromatics with more than two rings.

4409. (previously presented): The mixture of claim 4399, wherein about 5 % by weight to about 30 % by weight of the condensable mixture comprise cycloalkanes.

4410. (previously presented): The mixture of claim 4399, further comprising a non-condensable component, wherein the non-condensable component comprises hydrogen (H_2), and wherein the hydrogen is greater than about 10 % by volume at 25 °C and one atmosphere absolute pressure of the non-condensable component and wherein the hydrogen is less than about 80 % by volume at 25 °C and one atmosphere absolute pressure of the non-condensable component.

4411. (original): The mixture of claim 4399, further comprising ammonia, and wherein greater than about 0.05 % by weight of the produced mixture is ammonia.

4412. (currently amended): The mixture of claim 4399, further comprising ammonia, and wherein at least a portion of the ammonia is used to produce fertilizer.

4413. (original): The mixture of claim 4399, wherein about 0.1 % by weight to about 2 % by weight of the condensable mixture comprises olefins.

4414. (previously presented): A condensable mixture produced from a coal formation, comprising:

olefins, wherein about 0.1 % by weight to about 2 % by weight of the condensable mixture comprises olefins;

multi-ring aromatics, wherein less than about 2 % by weight of the condensable mixture comprises multi-ring aromatics with more than two rings; and

oxygenated hydrocarbons, wherein greater than about 25 % by weight of the condensable mixture comprises oxygenated hydrocarbons.

4415. (previously presented): The mixture of claim 4414, wherein less than about 5 weight % of hydrocarbons in the mixture have a carbon number greater than approximately 25.

4416. (previously presented): The mixture of claim 4414, wherein less than about 1 % by weight, when calculated on an atomic basis, of the condensable mixture is nitrogen.

4417. (previously presented): The mixture of claim 4414, wherein less than about 1 % by weight, when calculated on an atomic basis, of the condensable mixture is oxygen.

4418. (previously presented): The mixture of claim 4414, wherein less than about 1 % by weight, when calculated on an atomic basis, of the condensable mixture is sulfur.

4419. (previously presented): The mixture of claim 4414, wherein the oxygenated hydrocarbons comprise phenols.

4420. (previously presented): The mixture of claim 4414, wherein greater than about 20 % by weight of the condensable mixture comprises aromatic compounds.

4421. (previously presented): The mixture of claim 4414, wherein less than about 0.3 % by weight of the condensable hydrocarbons comprise asphaltenes.

4422. (previously presented): The mixture of claim 4414, wherein about 5 % by weight to about 30 % by weight of the condensable hydrocarbons are cycloalkanes.

4423. (original): The mixture of claim 4414, further comprising ammonia, wherein greater than about 0.05 % by weight of the produced mixture is ammonia.

4424. (currently amended): The mixture of claim 4414, further comprising ammonia, wherein at least a portion of the ammonia is used to produce fertilizer.

4425-5149. (cancelled)